

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, of listing, of claims in this application.

Listing of Claims

Claim 1 (currently amended): A coated cutting tool member whose hard coating layer exhibits a superior chipping resistance during a high speed and severe cutting operation, the coated cutting tool member comprising:

a hard substrate; and

a hard coating layer of a nitride compound containing Ti, Al, and Zr, which is formed on a surface of the hard substrate using a physical vapor deposition method at an overall average thickness of 1 to 15 μm , wherein

the hard coating layer has a component composition profile in which maximum Al containing points and minimum Al containing points appear ~~alternatingly~~alternately and repeatedly at a predetermined interval in a direction of thickness of the hard coating layer, and the amount of contained Al component continuously varies from the maximum Al containing points to the minimum Al containing points and from the minimum Al containing points to the maximum Al containing points,

the maximum Al containing points satisfy a composition formula of $(\text{Ti}_{1-(X+Y)}\text{Al}_X\text{Zr}_Y)\text{N}$ (where X indicates an atomic ratio of 0.45 to 0.65, and Y indicates an atomic ratio of 0.01 to 0.15) and the minimum Al containing points satisfy a composition

ratio of 0.40 to 0.60 with respect to entire metal components, and the minimum Al containing points contain Al component at an atomic ratio of 0.05 to 0.25 with respect to entire metal components, and

wherein a distance between one of the maximum Al containing points and adjacent one of the minimum Al containing points is from 0.01 to 0.1 μm .

Claim 5 (currently amended): A coated cutting tool member according to ~~any one of claims 1 to 4~~ claim 1, wherein the hard substrate is made of tungsten carbide based hard metal.

Claim 6 (currently amended): A coated cutting tool member according to ~~any one of claims 1 to 4~~ claim 1, wherein the hard substrate is made of titanium carbonitride based cermet.

Claim 7 (currently amended): A coated cutting tool member according to ~~any one of claims 1 to 4~~ claim 1, wherein the hard substrate is made of cubic boron nitride based sintered material.

Claim 8 (currently amended): A method for forming a hard coating layer exhibiting a superior chipping resistance during a high speed and severe cutting operation on a surface of a cutting tool substrate, the method comprising:

mounting the cutting tool substrate on a turntable housed in an arc ion plating apparatus at a position radially away from a center axis of the turntable in a manner rotatable about an axis of the cutting tool substrate;

producing a nitrogen gas atmosphere as the reaction atmosphere in the arc ion plating apparatus; and

Claim 11 (original): A coated cutting tool member according to claim 8, wherein the hard substrate is made of cubic boron nitride based sintered material.

Claim 12 (new): A coated cutting tool member according to claim 2, wherein the hard substrate is made of tungsten carbide based hard metal.

Claim 13 (new): A coated cutting tool member according to claim 2, wherein the hard substrate is made of titanium carbonitride based cermet.

Claim 14 (new): A coated cutting tool member according to claim 2, wherein the hard substrate is made of cubic boron nitride based sintered material.